

REMARKS

Applicants acknowledge with appreciation the prospective allowance of claims 2, 4, 5, 7, 8, 10, and 17 through 21.

At present, claims 1, 3, 6, 9, 11 through 16, and 22 through 26 are rejected. Of the rejected claims, claims 1, 11, 14 and 25 are independent.

Reconsideration and allowance of claim 1, "rejected under 35 U.S.C. 102(b) as being anticipated by Miki (JP 3-175800)," are respectfully requested and reconsideration and allowance of claims 1, 3, 6, 9, and 22 through 24, "rejected under 35 U.S.C. 102(b) as being anticipated by Kishi (US 4,654,554)," are respectfully requested.

Applicants submit that the present invention is not anticipated by the Miki reference because the Miki reference is directed to a speaker unit that is fundamentally different from the present invention. The present invention is directed to a speaker in which the diaphragm is directly mounted to the frame of the speaker as shown in Applicants' Figure 1 and specified by claim 1 (i.e., a frame for supporting the piezoelectric vibrator that includes a diaphragm).

In the Miki reference speaker unit, in contrast, a thermoplastic resin edge member (3) and a resin film (4) are disposed between the diaphragm and frame (5) as shown in Figure 1 of the Miki reference. This comparison of the present invention and the Miki reference speaker unit is a clear indication of the fundamental difference between the present invention and the Miki reference.

Applicants submit that the present invention is not anticipated by the Kishi reference because the Kishi reference is directed to a speaker unit that is fundamentally different from the present invention. The speaker unit of the Kishi reference requires a main weight (104) on the visco-elastic layer (103). In contrast, the speaker of the present invention operates in a fundamentally different manner in that no such weight is required.

The Examiner has taken the position that each of the two references, Miki and Kishi, discloses

a visco-elastic member that has a bottom face area (determined by sight) which accounts for about 11%-80% of a bottom face area of the diaphragm

The Examiner has come to this conclusion by referring only to the drawings of the two references. There is no explicit disclosure of a visco-elastic member which accounts for about 11% to 80% of the bottom face area and Applicants submit that the claimed range of 11%-80% was not known or made obvious to one of ordinary skill in the art from a study of either of the two references. It is not clear, only from the drawings of the two references, that the claimed range of 11%-80% is taught. One skilled in the art would not treat patent drawings as product drawings from which one would determine specific dimensional characteristics and the like.

Consequently, claim 1 is patentable over the Miki and Kishi references for the reasons advanced above. Claims 3, 6, 9, and 22 through 24, dependent on claim 1, likewise are patentable over the Kishi reference for the same reasons.

Reconsideration and allowance of claims 11 and 13, "rejected under 35 U.S.C. 102(b) as being anticipated by Kishi (US 4,654,554)," are respectfully requested. The Examiner contends that claim 11 is anticipated by the Kishi reference because the Kishi reference discloses, among other elements, a support element (16, 8) for supporting the piezoelectric vibrator. This is incorrect. The Kishi reference, at column 6, lines 35-40 and at column 7, lines 39-41, discloses that only damper pads (16) and sponge pad (16) are provided between the weight and the bottom face of the outer case. There is no mention that such pads are or can be "a support element for supporting the piezoelectric vibrator" as specified in claim 11.

Consequently, the Kishi reference speaker unit does not provide the advantages of the present invention where:

(1) an excessive amplitude occurring in the central portion of the piezoelectric vibrator can be minimized, thereby providing improved withstand input levels leading to a reduction in the number of lead wires, reduction in the

possibility of malfunction, and improvement of production yield (page 42, lines 10 through 18 of Applicants' specification), and

(2) a piezoelectric loud speaker, which has a high sound volume level and flat reproduced sound volume-frequency characteristics, is realized (page 41, lines 11 through 26 of Applicants' specification).

Claim 11, therefore, is patentable over the Kishi reference for the reasons advanced above. Claims 13, dependent on claim 11, likewise is patentable over the Kishi reference for the same reasons.

Reconsideration and allowance of claim 14, "rejected under 35 U.S.C. 102(b) as being anticipated by Rapps et al. (US 5446332)," are respectfully requested and a reconsideration and allowance of claims 14 and 15, "rejected under 35 U.S.C. 102(b) as being anticipated by Miki (JP 3-175800)," are respectfully requested.

The Examiner has stated, with respect to the rejection of claim 14 based on the Rapps et al. reference and the rejection of claim 14 based on the Miki reference, that "no voltage application means are claimed and thus the application of voltages is a goal of the invention which carries no patentable weight". Claim 14 has been amended to include the features of:

- (1) a voltage applying means for applying a plurality of voltages, and
- (2) wherein at least two of the plurality of piezoelectric members have a different voltage applied thereto from the voltage applying means.

The amendments to claim 14 should overcome the criticism of the Examiner. Applicants submit that the Rapps et al. and Miki references fail to teach or suggest the features claim 14 set forth above.

Claim 14, therefore, is patentable over the Rapps et al. and Miki references for the reasons advanced above. Claim 15, dependent on claim 14, likewise is patentable over the Miki reference for the same reasons.

Reconsideration and allowance of claim 12, "rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi (US 4,654,554) in view of Barr (US 5,161,200)," are respectfully requested. Claim 12 is dependent on claim 11, and, therefore, is patentable over the Kishi reference considered alone for the same reasons advanced above in connection with the rejection of claim 11 based on the Kishi reference considered alone. The Barr et al. reference fails to make up for the deficiency of the Kishi reference in anticipating claim 11, so that claim 12, dependent on claim 11, is patentable over the combination of the Kishi and Barr et al. references.

Reconsideration and allowance of claim 16, "rejected under 35 U.S.C. 103(a) as being unpatentable over Miki (JP 3-175800) in view of Kitanishi (US 5,321,761)," are respectfully requested. Claim 16 is dependent on claim 14, and, therefore, is patentable over the Miki reference considered alone for the same reasons advanced above in connection with the rejection of claim 14 based on the Miki reference considered alone. The Kitanishi reference fails to make up for the deficiency of the Miki reference in anticipating claim 14, so that claim 16, dependent on claim 14, is patentable over the combination of the Miki and Kitanishi references.

Reconsideration and allowance of claim 25, "rejected under 35 U.S.C. 103(a) as being unpatentable over Miki (JP 3-175800)," are respectfully requested. Claim 25 specifies

"the bottom face area of the visco-elastic member is equal to or greater than the bottom face area of the piezoelectric member."

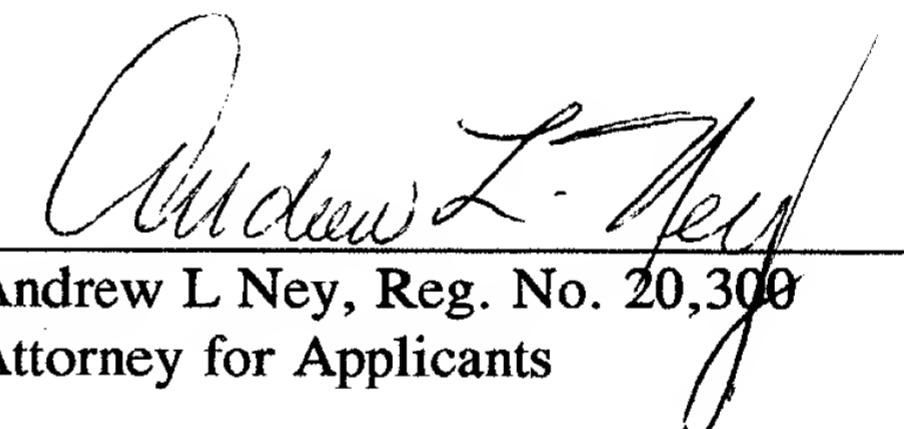
The Miki reference fails to teach or suggest such a feature. This difference between Applicants' invention, as defined by claim 25, and the Miki reference is important. As set forth on page 39, lines 28 through 33 of Applicants' specification, this feature of Applicants' invention provides the advantage of the visco-elastic member serving as a means for protecting the piezoelectric member from extrinsic impacts of shocks, and/or preventing foreign articles from straying into the speaker system to cause a peeling of, or damage to, the piezoelectric member.

Consequently, claim 25 is patentable over the Miki reference.

Reconsideration and allowance of claim 26, "rejected under 35 U.S.C. 103(a) as being unpatentable over Miki (JP 3-175800) in view of Knecht (US 5,577,319)," are respectfully requested. Claim 26 is dependent on claim 1, and, therefore, is patentable over the Miki reference considered alone for the same reasons advanced above in connection with the rejection of claim 1 based on the Miki reference considered alone. The Knecht reference fails to make up for the deficiency of the Miki reference in anticipating claim 1, so that claim 26, dependent on claim 1, is patentable over the combination of the Miki and Knecht references.

In view of the foregoing amendments and remarks this application is in condition for allowance which action is respectfully requested.

Respectfully Submitted,

  
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Enclosures:

Version with markings to show changes made

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VERSION WITH MARKINGS TO SHOW CHANGES MADECLAIMS:

1           14. (Amended) A piezoelectric loudspeaker comprising:

2           a voltage applying means for applying a plurality of voltages;

3           a piezoelectric vibrator including a diaphragm and a plurality of  
4           piezoelectric members provided on at least one face of the diaphragm, the  
5           diaphragm being vibrated by the plurality of piezoelectric members; and

6           a frame for supporting the piezoelectric vibrator,

7           wherein [different voltages are applied to] at least two of the  
8           plurality of piezoelectric members have a different voltage applied thereto from  
9           the voltage applying means.